

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) An electronic monitoring circuit provided with an integrated circuit hardware product for assisting a debugger system in debugging an electronic circuit implemented within the integrated circuit hardware product, said electronic monitoring circuit being created for use with the electronic circuit and being coupled to the electronic circuit within the integrated circuit hardware product, said electronic monitoring circuit comprising:

within the integrated circuit hardware product:

a trigger processing unit comprising comparison circuitry for identifying trigger events and issuing a trigger action based on one or more of the identified trigger events;

design patching circuitry coupled to the trigger processing unit, the design patching circuitry comprising storage circuitry for storing patched values, the design patching circuitry further comprising a multiplexer, the multiplexer having a first input coupled to the storage circuitry and a second input coupled to a patchable signal line within the electronic circuit, the multiplexer having an output coupled to a register, the register having a register output, the register output to provide the patched values if the first input is enabled, the register output to provide the unpatched values if the second input is enabled;

a configuration register to store configuration information for use in configuring the trigger processing unit; and,

a communication controller coupled to the configuration register to provide external access to the configuration register by the debugger system.

2. (Previously Presented) An electronic monitoring circuit as recited in claim 1, the register output is coupled to the storage circuitry so that the patchable signal line is also able to support design visibility.

3. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein said electronic monitoring circuit further comprises:

a status register that stores status information pertaining to the electronic circuit, and

wherein said communication controller is coupled to said status register to provide external access to said status register by the debugger system.

4. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein said electronic monitoring circuit further comprises:

an analog-to-digital converter coupled to a second signal line within the electronic circuit and the trigger processing unit, the analog-to-digital converter to provide analog-to-digital conversion from the second signal line to the monitoring circuit.

5. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein said monitoring circuit includes a plurality of probe circuits coupled to signal lines within the electronic circuit and coupled to the trigger processing unit.

6. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein said plurality of probe circuits include at least one of:

a sampling circuit configured to sample at least one of the signals within the electronic circuit.

7. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein a design for said electronic monitoring circuit was automatically coupled to a design for the electronic circuit as part of designing the integrated circuit hardware product.

8. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein said electronic monitoring circuit is derived from a HDL description of the electronic circuit .

9. (Previously Presented) An electronic monitoring circuit as recited in claim 1, wherein a design of said electronic monitoring circuit was automatically created by an instrumentor as part of designing the integrated circuit hardware product.

10. (Original) An electronic monitoring circuit as recited in claim 1, wherein the monitored trigger events include current trigger events and previous trigger events.

11. (Previously Presented) An electronic monitoring circuit provided with an integrated circuit hardware product for assisting a debugger system in debugging an electronic circuit implemented within the integrated circuit hardware product, said electronic monitoring circuit being created for use with the electronic circuit

and being coupled to the electronic circuit within the integrated circuit hardware product, said electronic monitoring circuit comprising:

within the integrated circuit hardware product:

a trigger processing unit comprising comparison circuitry for identifying trigger events and issuing a trigger action based on one or more of the identified trigger events;

design patching circuitry coupled to the trigger processing unit, the design patching circuitry comprising storage circuitry for storing patched values, the design patching circuitry further comprising a multiplexer, the multiplexer having a first input coupled to the storage circuitry and a second input coupled to a patchable signal line within the electronic circuit, the multiplexer having an output coupled to a register, the register having a register output, the register output to provide the patched values if the first input is enabled, the register output to provide the unpatched values if the second input is enabled;

a status register to stores status information pertaining to the electronic circuit ; and,

a communication controller coupled to the configuration register to provide external access to the configuration register by the debugger system.

12. (Previously Presented) An electronic monitoring circuit as recited in claim 11, wherein the register output is coupled to the storage circuitry so that the patchable signal line is also able to support design visibility.

13. (Previously Presented) An electronic monitoring circuit as recited in claim 11, wherein said electronic monitoring circuit further comprises:

an analog-to-digital converter coupled to a second signal line within the electronic circuit and the trigger processing unit, the analog-to-digital converter to provide analog-to-digital conversion from the second signal line to the monitoring circuit.

14. (Previously Presented) An electronic monitoring circuit as recited in claim 11, wherein said at least one probe circuit includes at least one of:

a sampling circuit configured to sample at least one of the signals within the electronic circuit.

15. (Previously Presented) An electronic monitoring circuit as recited in claim 11, wherein said electronic monitoring circuit is derived from a HDL description of the electronic circuit .

16. (Previously Presented) An electronic monitoring circuit as recited in claim 11, wherein a design of said electronic monitoring circuit was automatically created by an instrumentor as part of designing the integrated circuit hardware product.

17. (Original) An electronic monitoring circuit as recited in claim 11, wherein the monitored trigger events include current trigger events and previous trigger events.

18.-24. (Canceled).

25. (Previously Presented) An integrated circuit product, comprising:
circuitry that implements functionality of said integrated circuit product;
and,
customized instrumentation circuitry comprising:
probes inserted into said circuitry that enable a first group of
internal signals produced by said circuitry to be examined; and,
a signal path that flows from storage circuitry into a signal line of
said circuitry, said storage circuitry to store patching values,
said signal path and storage circuitry to enable an internal
signal produced by said circuitry to be patched on said signal
line with said patching values.

26. (Previously Presented) An integrated circuit product as recited in claim
25, wherein said circuitry includes analog and digital portions, and
wherein said customized instrumentation circuitry includes an analog-to-
digital converter inserted into said circuitry to enable an internal signal produced
in an analog portion of said circuitry to be monitored.

27. (Previously Presented) An integrated circuit product as recited in claim
25, wherein
wherein said customized instrumentation circuitry is customized based on
the electronic design associated with said circuitry.

28. (Previously Presented) An integrated circuit product as recited in claim
25,

wherein said customized instrumentation circuitry is customized based on a user's desired scope of coverage and the electronic design associated with said circuitry.

29. -62. (Canceled).

COMMENTS

The enclosed is responsive to the Examiner's Final Office Action mailed on May 26, 2004. At the time the Examiner mailed the Final Office Action claims 1 – 62 were pending. By way of the present response the Applicants have canceled claims 18-24 and 29 – 62. As such claims 1-17 and 25-28 are currently pending. As claims 1-17 and 25-28 presently stand allowed, the Applicants respectfully submit that all pending claims are allowed and that the application as a whole should pass to issuance.

The Applicants thank the Examiner for the Examiner's efforts and for the allowance of claims 1-17 and 25-28.